Potential health benefits of the periodic vegetarianism in Greek Orthodox Christian diet: a brief overview

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ABSTRACT

OBJECTIVE: Greek Orthodox Christian (GOC) diet is periodically interchanging to a vegetarian-type diet and shares all the features of the Mediterranean diet. Several studies have described its dietary regulations, however, its possible involvement in health has only recently started to be investigated. The aim of this present study is to clarify the effects of GOC fasting on people's health.

METHODS: Original articles were searched via the online databases PubMed and Google Scholar published between 2000 and 2012.

RESULTS: Data indicate that adult and child fasters enjoy better dietary quality in comparison with non-fasters. In particular, GOC fasting appears to decrease body mass. The consumption of fat (total and saturated) is reduced, cholesterol (total and LDL) levels are lessened, while fiber intake is increased during fasting periods. The intake of most antioxidant vitamins and minerals does not appear to alter during fasting.

CONCLUSIONS: Existing data are still limited but very encouraging and underline the importance of initiating the design and performance of future dietary intervention studies focused on the potential health benefits of GOC fasting.

Keywords: Fasting, Vegetarian diet, Orthodox Christians

INTRODUCTION

The Greek Orthodox Christian (GOC) dietary regulations are an important component of the Mediterranean diet of Crete characterized by low levels of dietary saturated fatty acids, high levels of fibre and folate, and a high consumption of fruit, vegetables and legumes [1]. The three major fasting periods are: Christmas (40 days), Lent (48 days) and Assumption (August, 15 days) whilst people excluded from fasting are children under seven, pregnant women, the seriously sick persons, or travellers [2]. The dietary pattern is unique in that it regularly interchanges between an omnivorous to a vegetarian type of diet over the course of the ecclesiastical year [3], and its potential implication on health has only recently begun to be investigated. The aim of this brief overview is to clarify the impact of the periodic vegetarianism of GOC fasting on people's health status. Original articles were searched via Google Scholar and PubMed published between 1990 and 2012. Search terms were “Greek Orthodox Christian diet”, “Greek Orthodox Christian fasting”, “Mediterranean diet of Crete” and “periodic vegetarianism”. All papers identified were English or Greek language full text papers. The reference lists of identified articles for other relevant papers or textbooks were also searched.

INTAKES OF FOOD INGREDIENTS

GOC fasting is a periodic vegetarian Mediterranean-style diet. In a case-control study it was shown that fasters increased their fiber, magnesium, fruit and vegetable consumption during the fasting periods and decreased their...
Moreover, in another study it was found that fasters (as compared with controls) had lower intakes of end-holy days dietary cholesterol, total fat, saturated fatty acids and trans-fatty acids along with an increase in total dietary fiber attributed to their higher consumption of fruit and vegetables in end-holy periods [1]. Similar results were presented in a study during the fasting week, where participants (GOC monks) had lower intakes of total and saturated fat and trans-fatty acids, and higher intakes of dietary fibre, Fe, folate, legumes and fish/seafood in comparison with their normal diet. The consumption of dairy products, meat and eggs increased significantly in the non-fasting week [5]. It is noteworthy that GOC diet does not increase the risk of antioxidant vitamins A and E deficiency [3] while it does not have a major impact on Fe status and is not associated with a significantly greater degree of Fe deficiency [6]. It should be noted that GOC dietary regulations are an important component of the Mediterranean diet of Crete (the traditional diet of Greece before 1960) [1]. Several analyses of the dietary pattern of the diet of Crete indicate a number of protective substances, such as selenium, glutathione, a balanced ratio of (n-6):(n-3) essential fatty acids (EFA), high amounts of fiber, antioxidants (especially resveratrol from wine and polyphenols from olive oil), vitamins E and C [7]. It is essentially different from the diets consumed in Western and Northern European countries and is rich in nuts, fruits, vegetables, legumes, whole-wheat bread, fish, and olive oil, with moderate amounts of red wine, which is mainly consumed during meals [8].

**POTENTIAL HEALTH BENEFITS FOR ADULTS AND CHILDREN: THE ROLE OF ANTIOXIDANTS**

The effects of GOC diet on health parameters of fasters are presented in Table 1.

<table>
<thead>
<tr>
<th>Table 1: The effects of Greek Orthodox Christian diet on health parameters of fasters</th>
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<tbody>
<tr>
<td><strong>Subjects</strong></td>
</tr>
<tr>
<td><strong>Pattern of health-related behaviour</strong></td>
</tr>
<tr>
<td>250 individuals were interviewed via questionnaire</td>
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<td><strong>Impact on blood pressure</strong></td>
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<tr>
<td>38 fasters and 29 controls</td>
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<tr>
<td><strong>Blood lipid profile</strong></td>
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<tr>
<td>60 fasters and 60 controls</td>
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<tr>
<td><strong>Body Mass Index (BMI)</strong></td>
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<tr>
<td>60 fasters and 60 controls</td>
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<tr>
<td><strong>Levels of antioxidant vitamins A and E</strong></td>
</tr>
<tr>
<td>37 fasters and 48 controls</td>
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<tr>
<td><strong>Iron status</strong></td>
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<td>35 fasters and 24 controls</td>
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</tbody>
</table>

It has been demonstrated that Christian Orthodox Church’s lifestyle constitutes a pattern of health-related behaviour [9]. In an interesting study personal interviews were used to investigate a stratified sample of individuals in the greater Athens area. Multiple-regression analysis showed that persons adopting the Christian Orthodox Church’s lifestyle were more likely to behave in ways that enhance their health (especially regarding their hygiene, nutrition, physical activity and psychological status), after controlling for a set of sociodemographic factors and their current health status [9]. Anthropometric measurements presented lower Body Mass Index (BMI) on fasters compared to controls. Comparable results were found when the pre- and end-fasting values of
fasters were compared. No change was found in control subjects [2]. In another study where weight, upper arm circumference and triceps skin fold were measured it was shown that all anthropometric data dropped (the triceps skin fold even by 10 %) [10].

Furthermore, two independent case-control studies presented statistically significant lower values of end-fasting cholesterol (total and LDL) and LDL/HDL ratio in fasters [2, 10]. Similar results were obtained from another work in which it was found that blood lipid levels were more favourable during the fasting week [5]. As to the blood levels of antioxidant vitamins and minerals it was shown that adherence to the GOC diet does not increase the risk of antioxidant vitamins A and E deficiency [3] and is not associated with a significantly greater degree of iron deficiency [6].

The potential beneficial effects of the periodic vegetarianism in GOC diet/fasting have also been documented in children (children under seven are excluded from GOC fasting). In a survey it was shown that children who fasted regularly had not significant differences in height than those who fasted partially (i.e., not all days of fasting) or those who had not fasted ever [11]. Children who were fasting (all the days of fasting or less) consumed fewer calories than those who did not fast before. Furthermore, children who fasted recorded restricted consumption of saturated fatty acids and seemed to be closer to the daily recommended amounts of most nutrients than those who did not fast at all [11]. Child fasters enjoy better dietary quality and have healthier blood lipid profiles [12].

Although no study to date has examined oxidative status in response to GOC fasting it could be hypothesized that the high consumption of fruit, vegetables, legumes and the low levels of saturated fatty acids in GOC diet [1] could lead to increased serum levels of nutritional antioxidants and lower extent of fatty acid peroxidation. Moreover, the decreased levels of end-fasting LDL cholesterol (as a substrate for LDL oxidation) could retard the production of serum oxidized LDL particles which are extremely atherogenic and potentially carcinogenic [13]. It should be emphasized that the effectiveness of antioxidants contained in the LDL particles as blocking agents against LDL oxidation has been suggested [14].

CONCLUSIONS

Developing an integrated picture for the role of GOC diet in health is a challenging task that awaits further exploration. In sum, GOC fasting appears to lower body mass. The intake of total fat, saturated fat, and trans fatty acids decrease during fasting periods. Both total and LDL cholesterol decrease, while fiber intake increases during fasting periods. The intake of most vitamins and minerals does not appear to change during fasting. However, there are several limitations since the sample size of the presented studies was small, no power calculation was used and all the subjects were volunteers [15]. Religious adherence cannot be imposed to anyone for ethical and moral reasons and, thus, randomized controlled cross-over trials could not be conducted [15]. Still, the findings showed that the GOC diet might have positive health effects and could be used as a proxy for future studies [15]. Further research should focus on the design and performance of future dietary interventions concerning the potential health benefits of GOC fasting as a part of the Mediterranean diet of Crete [15, 16]. Moreover, it is being deemed important that dieticians, physicians and nutritional biochemists are able to exploit this dietary scheme of periodic vegetarianism and advise the GOC fasting adherents on how to further improve their meal planning [12].
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Περιηγητική ανασκόπηση

Πιθανές ευεργετικές δράσεις της περιοδικής χορτοφαγίας κατά τη νηστεία της Ορθόδοξης Χριστιανικής Εκκλησίας: μια σύντομη ανασκόπηση

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